



**East China Normal University**  
**GEC International Summer School**

**BUS307: Advanced Business Statistics**

**Term: June 16<sup>th</sup> to July 18<sup>th</sup>, 2025**

**Class Hours: Monday through Friday, 110 minutes each day (2,750 minutes in total)**

**Instructor: TBD**

**Home Institution: TBD**

**Office Hours: TBD**

**Email: TBD**

***Course Description***

This advanced level statistics course explores the complexities of conducting quantitative research for the social and administrative sciences. The course is organized around a research project on quantitative analysis of data. The course will conduct a thorough examination of regression techniques within the realms of business and finance. Authentic applications and real-world data will be employed consistently throughout the duration of the course.

*Prerequisite: None.*

***Course Objectives***

1. Gain a comprehensive understanding of estimation theory, with a specific focus on the principles and methodologies of maximum likelihood estimation.
2. Explore the inherent statistical relationships among variables and delve into the concept of causality.
3. Acquire skills in selecting suitable regression models for predictive analysis and forecasting.



4. Introduce foundational concepts of experimental design, analysis of variance, and factor analysis.
5. Refine a regression model to be accurate while including only the most significant variables.
6. Ascertain when the mathematical assumptions of least squares regression are not satisfied by the variables in a model.

### ***Required Text***

*Data Analysis & Decision Making with Microsoft Excel*, 3rd Ed, by Albright, Winston and Zappe. 2006.

ISBN: 0-324-40083-7

### ***Course Hours***

The course has 25 class sessions in total. Each class session is 110 minutes in length, for a total of 2750 minutes of in-class time. The course meets from Monday to Friday. ECNU awards 3 credits for this course. Different universities may count course credits differently. Consult officials at your own home institution.

### ***Attendance***

Summer school is very intense and to be successful, students need to attend every class. Occasionally, due to illness or other unavoidable circumstance, a student may need to miss a class. ECNU policy requires a medical certificate to be excused. Any absence may impact on the student's grade. Moreover, ECNU policy is that a student who has more than 3 absences will fail the course. Arriving late or leaving early will count as a partial absence.

### ***Grading Policy***

ECNU awards grades of A, A-, B+, B, B-, C+, C, D, and F. Most colleges and universities do not award transfer credit for grades of D or F.

In this course, grading will be based on the following:



Quizzes*2	10%*2=20%
Participation	10%
Midterm Exam	30%
Final Exam	40%

### ***General Expectations***

Students are expected to:

- Attend all classes and be responsible for all material covered in class and otherwise assigned. Any unexcused absence may impact a student's grade.
- Arrive to class on-time: Late arrivals are disruptive to your fellow students and to the conduct of the class.
- Complete the day's required reading and assignments before class.
- Review the previous day's notes before class; make notes about questions you have about the previous class or the day's reading.
- Refrain from texting, phoning or engaging in computer activities unrelated to class during class (不要用手机). It is highly disrespectful to the professor and to the class.
- Participate in class discussions and complete required written work on time.

### ***Course Schedule***

The planned schedule sketched out below may be modified to suit the interests or abilities of the enrolled students or to take advantage of special opportunities or events that may arise during the term.

#### *Week 1*

- *Day 1*
  - o *Overview of the course*
- *Day 2: Estimation*
  - o *Maximum likelihood estimation*
- *Day 3: Estimation*
  - o *Function & Graphical, and analytic*
- *Day 4: Estimation*
  - o *Estimation of parameters of the normal distribution*



- *Estimation of parameters of the binomial distribution*
- *Day 5*
  - *Tutorial/Discussion*

## Week 2

- *Day 1: Regression Analysis: Estimating Relationships*
  - *Graphing relationships between variables*
- *Day 2: Regression Analysis: Estimating Relationships*
  - *Correlation*
  - *Measuring the degree of a linear relationship*
- *Day 3: Regression Analysis: Estimating Relationships*
  - *Simple Linear Regression*
- *Day 4: Regression Analysis: Estimating Relationships*
  - *Multiple Regression*
- *Day 5*
  - *Tutorial/ Discussion*
  - *Quiz 1*

## Week 3

- *Day 1: Regression Analysis: Estimating Relationships*
  - *Modeling possibilities*
- *Day 2:*
  - *International equity markets*
- *Day 3: Regression Analysis: Statistical Inference*
  - *The Statistical Model*
  - *Mathematical formalities of regression models*
- *Day 4*
  - *Midterm Review Session*



- *Day 5*
  - o *Midterm*

#### Week 4

- *Day 1: Regression Analysis: Statistical Inference*
  - o *Include/Exclude Decisions*
  - o *Statistical Inference*
- *Day 2: Regression Analysis: Statistical Inference*
  - o *Multicollinearity*
  - o *Violations of Regression Assumptions*
- *Day 3: Time Series Analysis and Forecasting*
  - o *Forecasting Methods*
  - o *Regression Methods*
- *Day 4: Time Series Analysis and Forecasting*
  - o *Exponential Smoothing*
  - o *Regression with Time Series Data*
- *Day 5*
  - o *Tutorial/Discussion*
  - o *Quiz 2*

#### Week 5

- *Day 1: Analysis of Variance for Designed Experiments*
  - o *Confidence Intervals for Means*
- *Day 2: Analysis of Variance for Designed Experiments*
  - o *Completely randomized Design*
- *Day 3: Multiple Comparison Tests*
  - o *Bonferroni Test*
- *Day 4*



- *Final Exam Review Session*
- *Tutorial/Discussion*
- *Day 5*
  - *Final Exam*

### ***Academic Honesty***

Students are expected to maintain high standards of academic honesty. Specifically, unless otherwise directed by the professor, students may not consult other students, books, notes, electronic devices or any other source, on examinations. Failure to abide by this may result in a zero on the examination, or even failure in the course.